

A FLAW IN THE FEDERAL ADULT EDUCATION FUNDING FORMULA:
ACADEMIC GAINS AND ENGLISH LANGUAGE LEARNERS

by
Amy Elizabeth Judd

A capstone project submitted to Johns Hopkins University in conformity with the
requirements for the degree of Master of Science in Government Analytics

Baltimore, Maryland
August, 2017

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1. Abstract

Existing research in the field of adult basic education diverges between *transformative learning theory*, which focuses on how student growth is accomplished in the classroom, and *human capital theory*, where adult education is viewed as an investment in a strong economy. US adult education programs are funded by federal legislation intended to create a strong workforce. Grant-funded programs are charged with serving adults deficient in the basic skills of literacy and numeracy or lacking a high school diploma, as well as adults who are limited in English language proficiency. Yet, the federal funding formula for state-level allocations has been historically based on Census calculations of adults lacking a high school diploma, and ignores those who do not speak English well, despite the expectation for grant-funded programs to serve both populations. In states serving large numbers of adults with limited English proficiency, programs struggle to meet performance requirements for student educational gain. The findings in this paper indicate that a better-aligned funding formula could more equitably distribute adult academic gains in each state, a matter of importance as US policymakers struggle to find common ground on issues of immigration, diversity, and upskilling the American workforce.

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2. Introduction

The American workforce has long depended on its foreign born residents to fulfill the needs of employers. The US Bureau of Labor Statistics reports that the number of foreign born workers has grown steadily since 1996, and now comprises over 16 percent of the American workforce: “Over the 1996–2012 period, the total labor force increased by about 21 million and more than half (about 11 million) of the increase was among the foreign born.”¹ Yet, current political rhetoric is rife with anti-immigrant sentiment, particularly as it relates to Central and South Americans crossing US southern borders, so much that a key campaign promise of President Donald Trump was to build a physical wall spanning the entire border between the US and Mexico to control immigration.

The federal government has historically legislated for workforce development programming through acts such as the Workforce Investment Act (WIA) of 1998.² Title II of WIA, the Adult Education and Family Literacy Act (AEFLA), continued an American tradition of funding adult basic education services that began with the Adult Education Act of 1966. AEFLA was designed to “(1) assist adults to become literate and obtain the knowledge and skills necessary for employment and self-sufficiency; (2) assist adults who are parents to obtain the educational skills necessary to become full partners in the educational

¹ U.S. Bureau of Labor Statistics. 2013. *Spotlight on Statistics: Foreign-born Workers in the U.S. Labor Force*, Abraham T. Mosisa: 3.

²In 2014, WIA was reauthorized as the Workforce Innovation and Opportunity Act (WIOA), but regulations tied to WIOA services were slow to be developed and the current fiscal year, 2017, is the first year in which WIOA-funded programs have been operating under these regulations. As a result, for the purposes of this paper’s analysis, adult education programming will be examined through the lens of WIA, due to lack of data and formative literature about WIOA; however, recommendations for further study and policy influence in the WIOA climate will be made in the paper’s conclusion.

development of their children; and (3) assist adults in the completion of a secondary school education.”³ Title II defines adult education and the Act’s targeted population:

- (1) ADULT EDUCATION - The term “adult education” means services or instruction below the postsecondary level for individuals -
 - (A) who have attained 16 years of age;
 - (B) who are not enrolled or required to be enrolled in secondary school under State law; and
 - (C) who—
 - (i) lack sufficient mastery of basic educational skills to enable the individuals to function effectively in society;
 - (ii) do not have a secondary school diploma or its recognized equivalent, and have not achieved an equivalent level of education; or
 - (iii) are unable to speak, read, or write the English language. ⁴

The US Department of Education, Office of Career, Technical, and Adult Education (OCTAE) administered adult education grants to US states and territories to carry out the provisions of the WIA. Under WIA, state grants were calculated based on the number of resident adults lacking a high school diploma or its equivalent. The WIA funding formula did not take into consideration the resident population of adults who speak English less than well. While WIA defined the targeted population, in part, as adults unable to speak, read, or write the English language, it made no funding provision for this population. This omission left adult education service providers in a disadvantageous position to deliver quality education services to all residents in need.

Adult education funding in the US comprises, comparatively, a mere fraction of the funds allocated by federal, state, and local governments to K-12 primary and secondary school systems. “In 2013, the United States spent \$11,800 per full-time equivalent (FTE)

³ Workforce Investment Act of 1998, Public Law 105-220, 105th Cong., (August 7, 1998), §§202.

⁴ Ibid., §§203.

student on elementary and secondary education.”⁵ While it is difficult to equate adult education student activities to FTEs because of the often part-time nature of adult student participation, it is nevertheless revealing that the average annual per capita expenditure for adult education students from 2005 to 2014 was \$775⁶, only 15% of the K-12 per capita expenditure. Though the content taught in K-12 and adult education classrooms is much the same, it can be argued that the adult education population is far more academically challenged, having previously experienced minimal formal education or having poor K-12 education experiences. In addition to this abysmal level of funding, the exclusion in the federal funding formula of a major portion of the population expected to be served under WIA has created a hardship for programs attempting to utilize grant funds with fidelity. States are required to contribute 15% matching funds to receive federal AEFLA grants, but on average, for the fiscal years spanning 2005-2014, states contributed 53% of the total funds expended on adult education. The disparity of state funding percentages across the 50 states is broad, ranging from 1% to 90% of total adult education funding, due to variance in individual states’ financial conditions and their commitment to adult education and workforce development.

Even after most states contribute far more than is legislatively expected, The Center for Law and Social Policy (CLASP) explains the dearth of funding in context of the benefits adult education provides to society:

Although federal adult education has traditionally been supplemented by sizeable state-level matching funds, a decline in federal and state funding for adult education has resulted in states serving only a fraction of the students – 2 million out of 93 million – who could benefit from services. Funding for

⁵ U.S. Department of Education. 2017. *The Condition of Education 2017*, by McFarland, J. et al. NCES 2017144, May. 2.

⁶ Calculated from data available in the U.S. Department of Education, Office of Career, Technical, and Adult Education’s National Reporting System (NRS) for Adult Education. NRS data serves as the basis of this paper’s analysis, and calculated variables will be discussed at length in Section 4.1.

adult education brings significant returns to individuals, their families, and communities. Adults with a high school education and beyond are more likely to be employed and less likely to live in poverty and need public assistance, such as food stamps, Medicaid, and housing subsidies. They are also more likely to thus contribute to the tax base through state and federal income taxes.⁷

Between 2005-2014, 33% of the students enrolled in US adult education programs studied English as a Second Language (ESL) while the states received no WIA funding specifically formulated to serve this population. Programs are faced with the requirement to serve a population not considered in the creation of their federal budget allocation, and must decide between serving numbers of learners beyond their capacity to produce successful academic outcomes, or placing individuals meeting the AEFLA definition of adult education eligibility on lengthy wait lists to receive services.

This paper reports the effect of federal adult education funding on the success of program-enrolled learners in achieving formally-measured educational functioning level (EFL) gains, taking into consideration the percent of total funds contributed by individual states to adult education, the percentage of adult learners in each state receiving ESL instruction, and the number of hours students spend in the classroom or in distance learning. The analysis also takes into consideration the unique population characteristics of four US geographical regions. The paper begins with an examination of the existing literature on the topic of adult education, and its theoretical framework. It then details the data and methods used for examining adult education outcomes, and presents the results of this study. The paper concludes with a summary of findings and recommendations for further study and policy initiatives.

⁷ Foster, Marcie. 2012. *Adult Education Funding Levels and Enrollment*. Washington, DC: Center for Law and Social Policy - Center for Postsecondary and Economic Success. Accessed August 13, 2017, <http://www.clasp.org/resources-and-publications/files/adult-ed-funding-enrollment-February-2012.pdf>.

3. Literature Review and Theoretical Framework

Research on the effects and outcomes of adult basic education typically diverges down one of two theoretical paths - transformative learning experience versus the economics of human capital. To situate this analysis within the existing body of work on adult education programming and outcomes, a review of literature from both perspectives is necessary.

3.1 Adult Basic Education and Transformative Learning

The basis of transformative learning is that it changes how learners experience the world. It “may be defined as learning that transforms problematic frames of reference to make them more inclusive, discriminating, reflective, open, and emotionally able to change.”⁸ The culture of adult basic education classrooms is one of acceptance, diversity and inclusion. Students are often from marginalized populations, such as those living in poverty, of minority race or ethnicity, or lacking extensive educational ability or background. Their barriers to academic and economic success include lack of transportation, childcare and medical care, low self-esteem, uncertain immigration status, criminal histories, or lack of education role models and positive experiences in school. The simple act of registering for, much less attending and persisting in, a basic academic course is emotionally daunting. Adult education instructors often gravitate toward the field because they seek to transform the lives of those who have had the least societal support and opportunity. “As an occupation, adult education, has historically been a cultural product of Europe and North America and has been identified with the development of autonomy, equality, social justice

⁸ Mezirow, Jack. 2009. "Transformative Learning Theory." In *Transformative Learning in Practice*, by Edward W. Taylor and Associates, 18-31. San Francisco: John Wiley & Sons, Inc.

and democracy. [With] Transformation Theory, the meaning of these beliefs need to be validated through a continuing process of critical reflection on assumptions and discourse.”⁹

Accordingly, there is a great deal of research on adult education instructional methods and program planning that lead to outcomes of greater learner motivation, increased self-esteem and empowerment, feelings of community support, evolution of personal belief systems and sense of societal belonging.¹⁰ Certainly, these qualitative variables can be quantitatively researched and analyzed. But, this is often done in the context of andragogy, wherein a set of adult learning principles are “adapted to fit the uniqueness of the learners and the learning situation.”¹¹ Andragogy focuses on the *process* of individual adults’ growth through education and how it is accomplished in the classroom. It is learner-centered learning, as opposed to pedagogy, which is considered teacher-centered. Malcolm Knowles stresses “the strength of andragogy as a set of core adult learning principles that apply to all learning situations. The goals and purposes for which the learning is offered are a separate issue.”¹² Andragogy has been often criticized as “a set of assumptions” lacking “a research definition [that] leads to mixed research results,” and fails to focus on the “impact of sociocultural factors on learners.”¹³ Certainly, the cultural diversity of adult education students deserves attention in the current political climate on immigration, diversity and inclusion.

⁹ Ibid.

¹⁰ Wright, Kathleen P. King and Lisa. 2003. “New Perspectives on Gains in the ABE Classroom: Transformational Learning Results Considered.” *Adult Basic Education*, Volume 13, Number 2, 103.

¹¹ Malcolm S. Knowles, Elwood F. Holton III, and Richard Swanson. 1973. *The Adult Learner: The Definitive Classic in Adult Education and Human Resource Development*. New York, NY: Routledge, 5.

¹² Ibid.

¹³ Baumgartner, Lisa, et al. 2003. “Adult Learning Theory: A Primer.” *Center on Education and Training for Employment, The Ohio State University College of Education*, Information Series No. 392, 14.

Some studies do indeed examine adult education through the lens of social justice and equality, such as the work of Boyadjieva and Trichkova who “conceptualize social justice in adult education by differentiating two aspects of participation in it: inclusion and fairness.”¹⁴ Boyadjieva and Trichkova conduct a quantitative analysis of adult education using indices of fairness in participation for both informal and formal education for learners with both low and high education. Further emphasizing inclusion of learners of diverse backgrounds, Talmadge C. Guy makes a case for “culturally relevant” adult education as a source of identity-building and “combating cultural domination and oppression.”¹⁵

3.2 Adult Education and Human Capital

Shifting gears, adult basic education is often quantitatively examined from an economic and workforce development perspective, as are the programs funded by WIA and the data used in this paper. Nobel Prize-winning economist Gary Becker believes “[e]ducation and training are the most important investments in human capital.”¹⁶ Becker acknowledges that “the concept of human capital remains suspect within academic circles that organize their thinking about social problems around a belief in the exploitation of labor by capital.”¹⁷ Viewing adult education students as mere cogs in the wheel of a country’s economic system is often considered insensitive to the individual human needs and backgrounds of learners, and diminishes the transformational power of education on the individual level.

¹⁴ Boyadjieva, Pepka and Petya Ilieva-Trichkova. 2017. “Between Inclusion and Fairness: Social Justice Perspective to Participation in Adult Education.” *Adult Education Quarterly*, Volume 67, 100.

¹⁵ Guy, Talmadge C. 1999. “Culture as Context for Adult Education: The Need for Culturally Relevant Adult Education.” *New Directions for Adult and Continuing Education*, Number 82, 12.

¹⁶ Becker, Gary S. 1993. *Human Capital*. Chicago, IL: University of Chicago Press, 17.

¹⁷ *Ibid.*, 16.

Individual growth is acknowledged in the recent reauthorization of WIA in 2014, resulting in the Workforce Innovation and Opportunity Act (WIOA) which states that federal adult basic education funding is meant “to strengthen the United States workforce development system through innovation in, and alignment and improvement of, employment, training, and education programs in the United States, and to promote individual and national economic growth.”¹⁸ Nevertheless, some scholars believe that recent economic events and the great need for middle-skilled workers in America bring us to a time that “challenges the traditional role and mission” of the adult education profession, where “[r]ather than focus on the learning needs of individuals and social justice movements, adult educators will need to expand their role to become labor-market activists and practitioners.”¹⁹

Grantees and sub-grantee agencies must doggedly monitor student performance through formal, prescribed academic assessments that indicate learner increases in federally-designated educational functioning levels (EFLs.) They must also collect and report data on the core follow-up goals of job attainment, job retention, median earnings, completion of secondary credentials, and entry into post-secondary education. Programs must align services with labor market information and are mandated to partner with local workforce development boards, government employment agencies, community colleges and social service agencies, among others, to ensure the focus of programming is on workforce development. Some individual state grantees have instituted “pay for performance” models where local-level sub-grantees are penalized or rewarded based on learner achievement of

¹⁸ Workforce Innovation Opportunity Act of 2014, Public Law 113-128, 113th Cong., (July 22, 2014), §52.

¹⁹ Scully-Ross, Ellen. 2016. "Taking Care of Business: The Opportunities and Dilemmas for Adult Education in a Changing Economy." *New Directions for Adult and Continuing Education*, 74.

academic and core follow-up goals, or lack thereof. Acceptable stewardship of federal adult basic education grant funds is sometimes quantified to “cost per seat hour” calculations. The transformative theory of education can be lost in the quantitative analysis of program performance.

In 2013, the Organisation for Economic Co-operation and Development’s (OECD) Programme for the International Assessment of Adult Competencies (PIACC) developed and led a worldwide “Survey of Adult Skills,” largely focusing on literacy, numeracy and problem solving in technology-rich environments. Scully-Ross believes trends of low-skilled young adults, in particular, “portend a large role for adult education in helping millions of Americans to develop the skills they need to achieve employment and economic security.”²⁰ Further, “[a]dult education is viewed as an economic project in which educators experience great pressure to reframe their mission in economic terms and align curriculum to support the knowledge and skill required for work.”²¹ Analysis of adult education programming through human capital theory is not likely to be diminished in this setting.

3.3 Blending the Theoretical Frameworks - Evaluations of Adult Basic Education prepared for the US Department of Education

As federal and state funding for adult basic education has cycled through various authorizing pieces of legislation in recent decades, it has largely been analyzed for effectiveness through human capital cost-benefit analyses based on the EFL and core follow-up goal metrics discussed above, though not entirely. Dating back to 1973, “A Longitudinal Evaluation of the Adult Basic Education Program” was prepared for the Office

²⁰ Ibid., 73.

²¹ Ibid., 77.

of Planning, Budgeting and Evaluation, US Office of Education²² and emphasized student attendance and academic assessment, but also put some emphasis on socio-economic indicators of the communities, classroom methodologies and teacher characteristics. While human capital cost-benefit analysis was key to this evaluation of effectiveness of federal funds, aspects of transformative learning theory was still interspersed with the economic data. A shifting away from transformative learning theory can be seen in the following years, such as in a New Jersey study of federal adult education funding use that “emphasized tangible outcomes related to employment, income, and public assistance... .economic variables [that] were deemed particularly important because of their presumed relationship to obtaining a high school credential. Obviously, however, a cost-benefit analysis must consider potential benefits of non-economic or human capital investment nature.”²³ With these benefits in mind, this analysis paid special attention to the metrics used to calculate federal, state, and local awards. By 1995, a study prepared for the US Department of Education as a “National Evaluation of Adult Education Programs”²⁴ paid great attention to the enrollment characteristics of students – adult basic, adult secondary and English for speakers of other languages – and whether the programs were appropriately funded based on target populations. A great deal of emphasis was made on academic assessment gains and employability skills attainment; however, this study interestingly refers frequently to measurements indicating a nod toward transformative learning aspects of programming. For

²² Kent, William P. 1973. *A Longitudinal Evaluation of the Adult Basic Education Program*. Sponsoring Agency - Office of Planning, Budgeting and Evaluation, US Office of Education, Falls Church, VA: System Development Corp.

²³ Darkenwald, Gordon G and Valentine, Thomas. 1984. *Outcomes and Impact of Adult Basic Education. Research Monograph Number 6*. Sponsoring agency New Jersey State Dept of Education, Trenton, Div. of Adult Education, New Brunswick, NJ: Center for Adult Development, Rutgers University, 27.

²⁴ Young, Malcolm. 1995. *National Evaluation of Adult Education Programs*. Prepared for US Department of Education, Office of the Under Secretary, Arlington, VA: Development Associates, Inc., 28.

example, the study asked students if they felt their studies had “helped a lot” in a “Client Perception of Skill Improvement.”²⁵ Interestingly, this study did recommend areas for further exploration that included elements of both transformative learning; however, by 2013, the extremely influential international PIACC study was framed by the importance of skills in the 21st century workplace.

3.4 Literature on Outcomes and Enrollment

Though there is adequate literature on theories of adult education, the body of scholarly peer-reviewed literature on actual adult education performance *outcomes* is surprisingly sparse, though several research institutes and professional organizations have addressed the population in need compared to the services available under a limited funding model. A report issued by the Migration Policy Institute in 2009, stressed the diversity of need across the US and emphasized the “long waiting lists for classes, the lack of integrated language and job skills instruction, inconsistent teacher and curriculum quality, the lack of differentiated instruction geared to students’ educational backgrounds, and the limited use of distance and other learning technologies.”²⁶ This report calls into question the disparity in the federal adult education funding formula and actual need as it applies to English language learners and discusses policy implications, but it does not analyze data on key performance indicators of adult student success, such as the gain of educational functioning levels (EFLs). A 2009 survey of local adult education programs, conducted by the National Council of State Directors of Adult Education, reported that 986 out of 1,368 local programs surveyed

²⁵ Ibid.

²⁶ Capps, Randy et al. 2009. *Taking Limited English Proficient Adults into Account in the Federal Adult Education Funding Formula*. Migration Policy Institute: National Center on Immigrant Integration Policy. Washington, DC. 9.

had waiting lists for new students.²⁷ The 50 states and the District of Columbia all “confirmed students on waiting lists in their state” and summarized that “[a] waiting list can be a psychological barrier to participation in adult education and literacy programs... ...for students seeking to access services but cannot.”²⁸

4. Data and Methods

4.1 The National Reporting System for Adult Education

The U.S. Department of Education’s Office of Career, Technical, and Adult Education (OCTAE) supports a National Reporting System (NRS) that houses data from all states and territories receiving federal funds for adult education. In the NRS, financial and performance reporting is aggregated from formula grantees each fiscal year in accordance with the requirements of WIA. The NRS provides state, regional, and national-level reports for each funding year beginning 1997. While much of the available data are found in ad hoc reports familiar to formula grantees across the nation, there is some degree of customization available to public users of the system. Reports can be customized by state or region, by various demographic variables such as age, race, and ethnicity, by students’ entering educational functioning level, and by fiscal year.

This study draws causal inferences from 10 years of observational, state-level NRS data. The 50 U.S. states and the District of Columbia are the units of analysis, and for each there were 10 years of data available, allowing for observation of multiple units over time; therefore, there are 510 observations. Data are available for the unincorporated U.S. territories and associated states of American Samoa, Federated States of Micronesia, Guam, Marshall Islands, Northern Mariana Islands, Puerto Rico, Palau and Virgin Islands; however,

²⁷ McLendon, Lennox. 2010. *Adult Student Waiting List Survey*. Washington, DC: National Council of State Directors of Adult Education, 2.

²⁸ *Ibid.*, 3.

these were eliminated from this study due to the diversity of culture and language spoken by residents. The years studied spanned 2005 to 2014, which were chosen for several reasons. First, the availability of full datasets for the variables to be studied was comprehensive for that 10-year period. Data prior to 2005 were not consistently available for all variables. Second, these ten years led up to the replacement of WIA by WIOA in 2014 as described in footnote 2. While the 2014 fiscal year technically falls into the period after WIOA enactment, regulations associated with the new legislation were not fully in place to affect the 2014 dataset, so it was appropriate to include 2014 for a ten-year analysis. Finally, there is a future opportunity to examine the same variables and units of analysis in a post-WIA adult education environment, as some funding factors have changed with WIOA legislation and may have a positive effect on instructional outcomes. Studying the data leading up to WIOA regulations provides a clean end date upon which to build further research.

4.2 Definition of Variables

Federally-funded adult education programs are measured on their students achieving Educational Functioning Level (EFL) gains, and a great deal of effort is expended by programs in assessing students and documenting these gains to ensure continued state and federal funding. The dependent variable in this study, *Percent EFL Gain*, is the percentage of adult education students, enrolled in federally-funded programs, that make at least one EFL gain in a fiscal year. EFLs are defined by OCTAE, which each year negotiates percentage EFL gain targets with individual states. Every student enrolled in a federally-funded program is placed in an EFL upon enrollment. Placement is based upon assessments using federally-approved, normed testing instruments, such as the Test of Adult Basic Education (TABE) or the Comprehensive Adult Student Assessment System (CASAS.) After a requisite number of hours, students are post-tested with a different version of the original

assessment and score improvement from one educational functioning level to the next or higher is counted as an EFL gain. A simple one-point raw score improvement is not sufficient for gain, because OCTAE has set score ranges specific to each testing instrument for each EFL, and a student must earn a score in the next level's range for a gain to be recorded. Table 1 lists, in order of academic difficulty, the levels for students in Adult Basic Education (ABE) or Adult Secondary Education (ASE), and in English for Speakers of other Languages (ESL). Using Table 1, an example of an earned EFL gain would occur when a student, assessed upon program entry and scoring in the range of ABE Beginning Literacy, advances enough in his or her studies within a fiscal year to earn a post-test score in the ABE Beginning Basic Education range. For the ten-year period studied, the national average of enrolled adult education students making an EFL gain is 41%.

Table 1: Educational Functioning Levels for Adult Education Students

For English Speakers:	For Non-native English Speakers:
ABE Beginning Literacy	ESL Beginning Literacy
ABE Beginning Basic Education	ESL Low Beginning
ABE Low Intermediate	ESL High Beginning
ABE High Intermediate	ESL Low Intermediate
Low ASE	ESL High Intermediate
High ASE	ESL Advanced
	ESL Completion

Source: National Reporting System for Adult Education

The study's main independent variable, *Per Capita Federal Funding*, is a calculation of the average amount of federal adult education spending for each student enrolled in an adult education program. It was derived by dividing the NRS variables on total federal funding per state and year, by student enrollment for the same state and year. The control variable

State Percent of Total Funding is a calculation of NRS data on each state's annual funding contribution to adult education programming, divided by NRS variables that total state and federal funding for adult education. The control variable *ESL Percent of Enrollment* is a calculation of the percentage of adult students placed in an EFL for Non-Native English Speakers, as opposed to EFLs for English speakers in Adult Basic Education or Adult Secondary Education. The control variable *Average Hours per Student* is a calculation of the number of hours on average that an individual student spends in class or distance education in a fiscal year, divided by total state enrollment for the same year.

Control dummy variables for the U.S. regions of Midwest, West, East, and South were created out of interest for differences in regional populations' academic needs across the country, and how the federal funding formula affects EFL gain on a regional basis. The NRS provides reports on a regional basis, and while those reports were not used in this analysis, the coding of states into regional dummy variables followed the NRS classifications shown in Table 2.

Table 2: U.S. Adult Education Regions

Region	States
West	Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming
Midwest	Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin
South	Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia
East	Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont

Source: National Reporting System for Adult Education

The nine variables discussed in this section are summarized in Table 3.

Table 3: Summary of Key Variables

Variables	Mean	Stand. Dev.	Min.	Max.
Percent EFL Gain	41.45%	11.05%	10.00%	78.00%
Per Capita Federal Funding	\$306.04	\$144.30	\$0.00	\$1,040.91
State Percent of Total Funding	52.66%	25.57%	0.00%	97.41%
ESL Percent of Enrollment	33.20%	18.31%	1.35%	83.42%
Average Hours Per Student	86.68	30.41	36.21	222.17
West	0.25	0.44	0	1
Midwest	0.24	0.42	0	1
South	0.27	0.45	0	1
East	0.24	0.42	0	1

Data Source: National Reporting System for Adult Education

4.3 Method of Analysis

This analysis uses a series of linear regressions to determine the effect of *Per Capita Federal Funding* on *Percent EFL Gain* for students enrolled in federally funded adult education programs. The study draws causal inferences from panel data, which typically calls for fixed effects regression to control for omitted variable bias differing over time; however, fixed effects models did not indicate goodness of model fit or consistent statistical significance across models. Using fixed effects methods, within R-squared values for the 4 models ranged from .004 to .023, and Prob>F values were as high as .243. Another issue encountered when attempting a fixed effects analysis was lack of consistency between models when the Hausman specification test was used to determine the best model. Based on the Hausman calculation of Prob>chi2, two regressions were most appropriate for a fixed effects model analysis and two were most appropriately evaluated using a random effects model. The use of two different model types would have created inconsistently

produced output for analysis. Because of these issues, a standard linear regression was used, and dummy variables for the four U.S. regions were added to control for cultural and academic population variance. The standard linear regression yielded results that were statistically significant and the models were better fits based on adjusted R-squared values.

5. Results

The results of this study indicate a positive relationship between *Per Capita Federal Funding* and *Percent EFL Gain*, as represented in Graph 1. While the correlation is not exceptionally strong in that the data points do not exactly fall along the regression line, it is nonetheless positive, and taken into consideration with the control variables in the five regressions discussed below, patterns in *Percent EFL Gain* can be meaningfully interpreted.

Graph 1: 2005-2014 Federal Per Capita Spending Average and EFL Gain

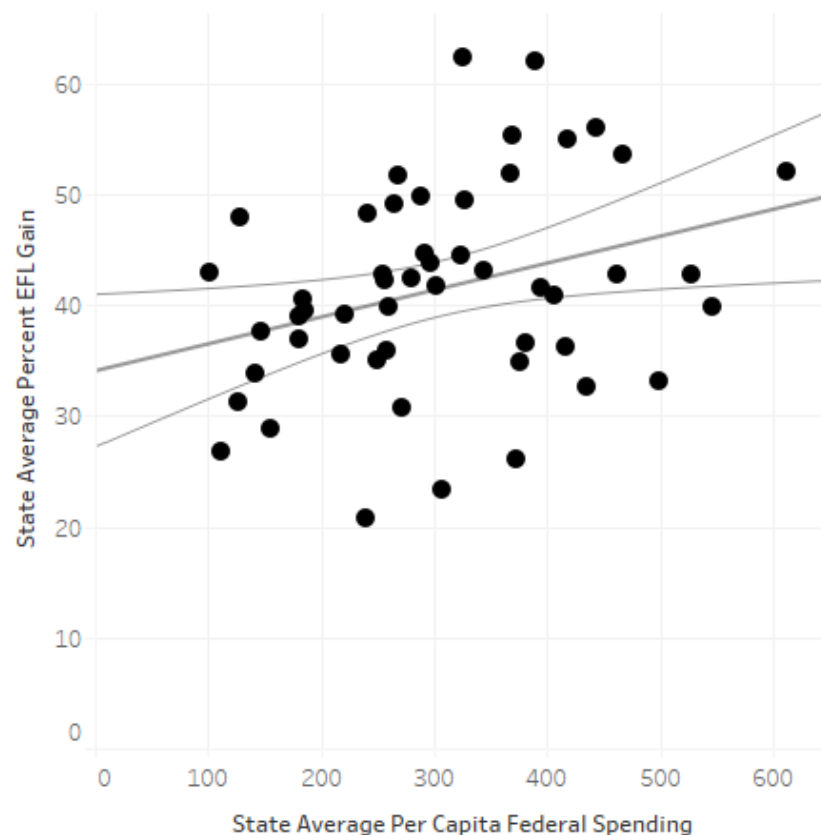


Table 4 represents the results of five linear regressions calculated to determine the effect of per capita federal funding on adult education student EFL gains.

Table 4 - Regression Analyses of the Effect of Per Capita Federal Funding on Adult Education Student Educational Functioning Level Gain

<i>Dependent variable - Percent Educational Functioning Level Gain</i>					
	Model 1	Model 2	Model 3	Model 4	Model 5
Per Capita Federal Funding	.02* (.00)	.01* (.00)	.01* (.00)	.01* (.00)	.01* (.00)
State Percent of Total Funding		-.09* (.02)	-.08* (.02)	-.10* (.02)	-.07* (.02)
ESL Percent of Enrollment			-.09* (.02)	-.13* (.03)	-.04** (.03)
Average Hours Per Student				.05* (.02)	.01* (.02)
Midwest					5.10* (1.43)
West					-3.74* (1.30)
East					Omitted
South					3.61* (1.49)
Constant	35.90 (0.98)	42.78 (1.84)	45.17 (1.87)	43.08 (1.96)	40.74 (2.67)
N	510	510	510	510	510
R ²	0.06	0.09	0.11	0.12	0.20
Adjusted R ²	0.05	0.08	0.10	0.11	0.19

**Coefficients statistically significant at the 1% level.*

***Statistical significance of the coefficient on ESL Percent of Enrollment declined to the 24% level in Model 5.*

Regression model 1 indicates a statistically significant relationship between per capita federal funding and student EFL gain. For every additional dollar of per capita funding in a

state, the EFL gain rate increased by .02. An increase of \$100 in funding generates a 2 percentage point increase in EFL gain performance. With per federal capita funding ranging from \$0 to \$1,041, this relationship could play an important role in whether a state meets federal targets for EFL gain. The coefficient on *Per Capita Federal Funding* decreases from .02 to .01 for Models 2 through 5, though it remains statistically significant at the 1% level and still indicates the importance of funding on education outcomes, particularly considering the wide range of funding values for *Per Capita Federal Funding*.

Regression model 2 incorporates the variable *State Percent of Total Funding*, for which there is a statistically significant relationship to EFL gain, which holds true in Models 3 through 5 with some variation in the value of the coefficient. For every percentage point decrease in the amount of a state's contribution to adult education, a .09 decrease will occur in EFL gain percentage, while the coefficient on *Per Capita Federal Funding* does not change. State funding percentages as a total of funding vary from 0% to 97%. While most fall in the 30% to 70% range, a state's economic condition or ideological climate toward adult education could drastically affect student EFL outcomes.

Regression model 3 incorporates the variable *ESL Percent of Enrollment*, for which there is a statistically significant relationship to EFL gain. For every percentage point decrease in the number of English language learners in a state, a .09 decrease will occur in EFL gain percentage. Similar to results in model 2, for *State Percent of Total Funding*, the coefficient of .09 can be quite influential considering the range of values for *ESL Percent of Enrollment*, which was 1 to 83% across the 510 observations in the study. This is an interesting conclusion that would be well-suited for further study beyond the scope of this analysis. It is unclear from this study whether this effect is due to overcrowded classrooms as states attempt to fulfill the demands of the student market, whether ESL learners face

greater challenges in the classroom, or perhaps both. Findings by the Migration Policy Institute “suggest that better-educated [limited English proficiency] adults may need less instruction to achieve English proficiency than [limited English proficiency] adults without a high school education.”²⁹ The same study concluded that adults in this population “represented a much larger share of the total adult population with less than a high school degree than of the total adult population with a high school degree or higher: 24 percent versus only 6 percent. This means that there remains a significant overlap between Title II’s main service populations: LEP adults and those without a high school education.”³⁰

Regression model 4 incorporates the variable *Average Hours Per Student*, for which there is a statistically significant relationship to EFL gain. For every one hour of additional instruction for students enrolled in adult education programs, it is expected that there will be a .05 increase in percent EFL gain. This stands to reason since more classroom or distance education time for students should yield academic gains with effective instruction, but to increase a single percentage point in EFL gain, a state’s student average of instructional hours would need to increase by 20 hours. While it may not seem like a tremendous goal to increase average student instruction by 20 hours, in adult education it would require significant student retention effort and funding. The average student attendance in the 510 observations of this study was only 87 hours per student, so a 20 hour increase across all observations would equate to a 23% increase in classroom hours. It should be noted that in model 5, the coefficient on *Average Hours Per Student* declined from .05 to .01, and the P value increased from .000 to .531, rendering it no longer statistically significant at any traditionally accepted level. This is nevertheless an interesting control variable when considering future

²⁹ Capps, 5.

³⁰ Ibid.

policy recommendations, and should be included to eliminate some of the risk of omitted variable bias inherent in the standard linear regression model

Regression model 5 incorporates the regional dummy variables of *Midwest*, *West*, *East*, and *South* to determine if the effect of federal funding per capita on EFL gain is altered by regional population differences. These variables indicate the state in which adult education services are delivered, per the list of NRS regions in Table 2. For example, if a state is in the Midwest, it was coded with a 1 in the Midwest variable column of the dataset. If a state was not in the Midwest, it was coded with a 0 in the Midwest variable column of the dataset. *East* was omitted from regression results because of collinearity. The results of this regression showed a negative coefficient for *West* (-3.74,) and positive coefficients for the South (3.61) and Midwest (5.10.) The negative influence of a Western regional classification is interesting, since the Migration Policy Institute’s report noted a “regional pattern to the education attainment of [limited English proficient] adults, with those who are less educated being more heavily concentrated in the Southwest.”³¹ Further, Table 5 represents the regional differences in *Percent EFL Gain* and *ESL Percent of Enrollment*, showing the lowest average EFL gain and highest percentage of ESL students in the Western states.

Table 5: Regional Outcomes

<i>Region</i>	<i>Percent EFL Gain</i>	<i>ESL Percent of Enrollment</i>
East	39.41%	40.49%
Midwest	45.96%	31.69%
South	44.31%	21.00%
West	36.08%	41.00%

Source: National Reporting System for Adult Education

³¹ Ibid., 6.

6. Conclusion

Adult education EFL gains are important on multiple fronts: to learners seeking to improve their academic capabilities in hopes of a better life, to program administrators seeking to maintain grant funding through acceptable program performance, and to granting agencies requiring good stewardship of limited and valuable government funds. This study set out to demonstrate a positive effect of federal per capita funding of adult education on student educational functioning level gains. Results of data analysis conclude that as federal per capita funding is increased, EFL gains also increase. These results are compounded as the percentage of state funds as a contribution to total funding are increased, the percentage of students in English language instruction (as opposed to adult basic or secondary instruction for native speakers of English) decreases, and the average number of hours students spend in instruction increases. The US region in which a student receives services is also an influential variable in the attainment of EFL gains. The unique characteristics of student enrollment and regional populations can present a challenge to effective use of federal funds for adult education.

Limiting the federal funding allocation to the Census calculation of adults lacking a high school diploma is over-simplistic in the diverse United States. An improved funding model would consider the number of adults in each state who don't speak English well, or who need both English language instruction and a high school diploma, and would likely result in more consistent EFL gains across the states.

The author's choice to report results of standard linear regression models, as opposed to more traditionally-used fixed effects modeling, raises the risk of omitted variable bias; however, results from fixed effects analysis were not statistically significant, did not indicate goodness of model fit, and were inconsistent when tested by the Hausman indicator

for fixed versus random effects. As a result, the cautious representation of standard linear regression across five models and with nine variables was chosen as the best method for this analysis.

This study was limited by the availability of data in the National Reporting System for Adult Education. Data on student outcomes such as employment gains and entry into post-secondary education could bolster the argument that greater and more equitably distributed federal funding is needed; however, for this study those statistics were not reliable due to the collection methods of individual states for these data, as well as the variance in state economies that could influence employment outcomes and student abilities to afford higher education.

Now that WIA has been reauthorized as WIOA, there is an opportunity to develop this hypothesis further in future studies. WIOA allows for some additional funding to states based on the English-language proficiency of its residents, and provisions small amounts accordingly to states for Integrated English Language Civics Education programs. Future research should consider this change and compare student outcomes in this slightly improved funding environment. Adult education practitioners and policymakers must remain vigilant in their support of improved funding for this important cause. The current political climate on immigration poses threats to continued funds for academic upskilling of the US foreign born population, but workforce development statistics show the importance of this population to national success, and the effect of federal funding on adult education outcomes are clear. Adult learners need continued and increased federal funding to achieve success in the 21st century workforce.

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8. Author's Curriculum Vita

Amy Judd directs a WIOA-funded adult education program at Lord Fairfax Community College in Virginia. At LFCC, she serves on the college's Diversity and Inclusion Committee, a faculty- and staff-led council that assesses the climate of diversity and inclusion at the college, which often involves issues related to the education experience of foreign born students. She serves on the Shenandoah Valley Workforce Development Board, which strategizes to support economic development through workforce development policy and practice initiatives, including those related to WIOA, and supports the mission of the Virginia Workforce Development Board. Prior to leading the regional program at LFCC, Judd managed an adult education program on the local level. Judd graduated in 1995 from Virginia Polytechnic Institute and State University with a B.A. in Communications, concentrating in Rhetoric. She was born in Harrisonburg, Virginia in May 1973.